REMARKS

Applicants respectfully request reconsideration of the above-identified patent application. Claims 1-49 and 51-55 are pending. Claim 50 was previously cancelled. Claims 3, 5, 7, 23-25, 33, 35-39, and 48 are amended to more particularly point out and distinctly claim the subject matter that Applicants regard as the invention. Applicants respectfully traverse the rejections. The subject matter of dependent claims 51 and 54-55 have been integrated into independent claim 48 with this response and are cancelled in this Response.

I. Examiner Interview

Applicants thank Examiner Milord for the courtesies extended to Applicants' attorney during the telephone interview conducted on April 29, 2008. In the interview, the Baraban and Mizutani references were discussed. The scope of a number of the independent claims were also discussed. Although no agreement was reached during the interview, Applicants respectfully submit that the Examiner will find all claims in condition for allowance upon full reconsideration.

II. Invention Summary

The present invention is significantly different from the prior art. Generally speaking, some of the independent claims recite a contactless power supply that has a controller that does one or more of varying the operating frequency, varying the resonant frequency, or varying the duty cycle in response to information received from the remote device. Other independent claims recite a remote device with a secondary that has 1) a variable impedance or a

variable inductor; or 2) receives variable frequency or variable duty cycle power from the contactless power supply.

As defined in independent claim 1, the present invention is directed to a contactless power supply for providing power to a remote device. The contactless power supply includes a resonant circuit, a receiver, and a controller. The resonant circuit has a variable resonant frequency and a primary winding for transferring power to the remote device. The receiver receives information from the remote device. The controller varies the variable resonant frequency in response to information received from the remote device.

As defined in independent claim 5, the present invention is directed to a contactless power supply for providing power to a remote device. The contactless power supply includes an inverter, a resonant circuit, a power source, a controller, and a receiver. The inverter has a duty cycle and an operating frequency. The resonant circuit is coupled to the inverter and has a resonant frequency. The resonant circuit has a primary for transferring power to the remote device. The power source is coupled to the inverter and has a rail voltage. The controller varies the operating frequency, the resonant frequency or the duty cycle, periodically during use . The receiver receives power information from the remote device.

As defined in independent claim 15, the present invention is directed to a remote device capable of receiving power from a contactless power supply. The remote device includes a remote device controller and a secondary winding having a secondary winding variable impedance.

As defined in independent claim 23, the present invention is directed to a method of operating a contactless power supply supplying power to a plurality of remote devices, each of the remote devices having power usage information. The method includes receiving the power usage information for each of the remote devices and adapting the contactless power supply in response to the power usage information periodically during use by changing at least one of the resonant frequency, operating frequency, or duty cycle of the contactless power supply.

As defined in independent claim 33, the present invention is directed to a contactless power supply for providing power to a remote device. The contactless power supply includes a primary winding for transferring power to a remote device, a receiver for receiving power usage information from the remote device and a controller for changing at least one of the resonant frequency, operating frequency, or duty cycle of the contactless power supply in response to the power usage information.

As defined in independent claim 39, the present invention is directed to a remote device for receiving power from a contactless power supply. The remote device includes a wireless transmitter for sending power consumption information to the contactless power supply, periodically during use. The remote device also includes a secondary for receiving variable frequency or variable duty cycle power from the contactless power supply.

As defined in independent claim 43, the present invention is directed to a remote device capable of receiving power from a contactless power supply capable of being communicatively coupled to a second device by way of the contactless power supply. The

remote device includes a variable inductor for receiving power from the contactless power supply and a transceiver for data communication with the contactless power supply.

As defined in independent claim 48, the present invention is directed to a contactless power supply. The contactless power supply includes an inductive power supply, a transceiver, a communication interface and a communication controller. The inductive power supply inductively energizes a plurality of remote devices and includes a tank circuit with a variable resonant frequency. The contactless power supply includes a controller capable of changing the variable resonant frequency, the inverter frequency, or the inverter duty cycle in response to information from the plurality of remote devices. The transceiver communicates data with the remote devices. The communication interface couples the contactless power supply with a second device. The communication controller manages communication between the second device and the remote devices.

II Art Rejections

1. Obviousness Rejection based on Baraban and Mizutani

As previously presented, claims 1-49, 51-55 were rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 7,065,658 ("Baraban") and U.S. Patent No. 6,756,697 ("Mizutani"). Applicants respectfully traverse this rejection as conceivably applied to the pending claims.

In establishing obviousness under Section 103, the Examiner carries the burden of presenting a *prima facie* case, *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), and must show that the references relied on teach or suggest all of the limitations of the claims. *In re*

Wilson, 424 F.2d 1382, 1385 (C.C.P.A. 1970). Obviousness may not be established using hindsight or in the view of the teachings or suggestions of the inventor. *Para-Ordnance Manufacturing, Inc. v. SGS Importers International, Inc.*, 73 F.3d 1085, 37 USPQ2d 1237 (Fed. Cir. 1995), *cert. denied* 117 S. Ct. 80 (1996).

Baraban is directed to synchronizing and inductively charging a personal digital assistant ("PDA"). Baraban includes an inductive charging system and a wireless communication system. Very little detail is given about the inductive charging system used in Baraban. The extent of the disclosure is that a primary coil resides in an electronic cradle and charges a secondary coil in the PDA. Baraban Col. 2, Lines 31-36. The wireless communication system "perform[s] data synchronization" and is unrelated to the inductive charging system. Baraban Col. 2, Lines 43-45.

Mizutani is directed to a mounting structure including a communication system for transmitting multiplex control signals to vehicle electrical devices. In some embodiments, the Mizutani system includes an inductive power supply for inductively transmitting power to a vehicle electrical device situated in a mounting structure. Mizutani provides little disclosure of the inductive power supply.

A. Independent Claim 1

There is no disclosure, suggestion or teaching in Baraban or Mizutani of "a resonant circuit having a variable resonant frequency" as claimed in independent claim 1. The Office Action asserts that Barbaran teaches a resonant circuit having a variable resonant frequency. The portions of Barbaran cited in the Office Action state that 1) an inductive

charging system may be used to recharge a portable computer's rechargeable battery (Col. 2, lines 33-36); and 2) A PDA can synchronize data with a computer using wireless communication (Col. 3, lines 44-59). Applicants fail to see how these cited passages teach a resonant circuit having a variable resonant frequency. Mizutani does not make up for this deficiency in Baraban.

There is no disclosure, suggestion or teaching in Baraban or Mizutani of "a controller that varies the variable resonant frequency of the resonant circuit" as claimed in independent claim 1. Mizutani is cited for this teaching. The passage allegedly supporting this teaching refers to adjusting the switching frequency of the *wired* battery charging circuitry, not a resonant frequency of a contactless power supply.

There is no disclosure, suggestion or teaching in Baraban or Mizutani of "a controller for varying the variable resonant frequency in response to information received from the remote device" as claimed in independent claim 1. Mizutani is cited for having a contactless power supply with a controller for varying the variable resonant frequency *in response to information received from the remote device*. The Mizutani vehicle side antenna and accessory side antennas are capable of two-way communication. However, there is no indication that Mizutani inductive power supply varies a variable resonant frequency in response to information received from the remote device. Instead, the information received from the remote device is relayed to other remote devices. For example, "information on incoming calls received by a mobile phone can be transmitted from the battery charger 20a to the display 20b of the navigation equipment and then displayed" Mizutani, Col. 6, Lns. 57-65. Mizutani nor Baraban disclose varying resonant frequency *in response to information received from the remote device.*

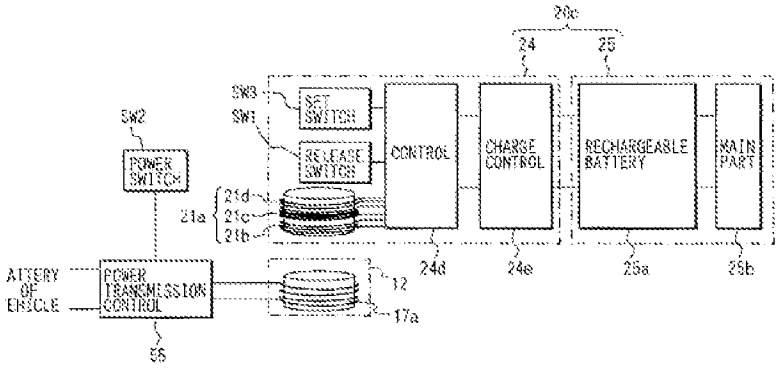
It is therefore respectfully submitted that independent claim 1 is patentable over Barbaran and Mizutani. Applicants respectfully request that the rejection of this claim be withdrawn.

B. Independent Claim 5

The Office Action asserts that Barbaran teaches an inverter having a duty cycle and an operating frequency. The portion cited in the Office Action describes wireless communication with a host computer (Col. 5 lines 4-20) and does not describe an inverter with a duty cycle and operating frequency.

There is no disclosure, suggestion or teaching in Baraban or Mizutani of "a controller for varying the operating frequency of the inverter, the resonant frequency of the resonant circuit or the duty cycle of the inverter, periodically during use" as claimed in independent claim 5. Mizutani is cited for this feature in the Office Action. Specifically, The Mizutani remote device 20c includes a controller 24e that can adjust the switching frequency and duty cycle of the power supplied to rechargeable battery 25a. This adjustment is not made by the contactless power supply, it is made on the secondary device 20c by a controller with electrical contact with the battery. The inductive power supply does not include a controller to vary the operating frequency, resonant frequency or duty cycle.

FIG. 14



It is therefore respectfully submitted that independent claim 5 is patentable over Barbaran and Mizutani. Applicants respectfully request that the rejection of this claim be withdrawn.

C. Independent Claim 15

The Office Action asserts that Barbaran discloses a secondary winding having a secondary winding variable impedance. The passages cited merely discuss wireless charging systems generally. Although wireless charging systems often include secondary windings, there is no teaching in Barbaran or any of the art of record of a secondary winding having a secondary winding variable impedance.

It is therefore respectfully submitted that independent claim 15 is patentable over Barbaran and Mizutani. Applicants respectfully request that the rejection of this claim be withdrawn.

D. Independent Claim 23

The Office Action appears to have some missing text in the rejection of claims 23-32. Applicants assume that the rejection is based on Baraban. As noted above, none of the

art of record discloses 1) receiving power usage information from a remote device; or 2) changing at least one of the resonant frequency of the contactless power supply, the operating frequency of the contactless power supply, or the duty cycle of the contactless power supply.

It is therefore respectfully submitted that independent claim 15 is patentable over Barbaran and Mizutani. Applicants respectfully request that the rejection of this claim be withdrawn.

E. Independent Claim 33

Again, none of the art of record discloses 1) a receiver for receiving power usage information from a remote device; or 2) a controller for changing at least one of the resonant frequency of the contactless power supply, the operating frequency of the contactless power supply, or the duty cycle of the contactless power supply.

It is therefore respectfully submitted that independent claim 33 is patentable over Barbaran and Mizutani. Applicants respectfully request that the rejection of this claim be withdrawn.

F. Independent Claims 39 and 43

None of the art of record discloses a secondary for receiving variable frequency or variable duty cycle power from a contactless power supply. As discussed above in detail, neither Baraban nor Mitzutani disclose contactless power supplies that produce variable duty cycle power or variable frequency power. Baraban does not detail the specifics of its inductive charging system and the control in Mizutani is dependent on which of the three coils 21b, 21c, or 21d that the remote device controller 24d selects for power.

It is therefore respectfully submitted that independent claims 39 and 43 are patentable over Barbaran and Mizutani. Applicants respectfully request that the rejection of these claims be withdrawn.

H. Independent Claim 48

None of the art of record discloses, teaches or suggests a "controller capable of changing the variable resonant frequency, the inverter frequency, or the inverter duty cycle in response to information from the plurality of remote devices" as claimed in independent claim 48.

It is therefore respectfully submitted that independent claim 48 is patentable over Barbaran and Mizutani. Applicants respectfully request that the rejection of this claim be withdrawn.

I. Dependent Claims

Dependent claims 2-4 are allowable for at least the reasons noted above in connection with independent claim 1. Furthermore, none of the references disclose a resonant circuit that includes a variable impedance element where the controller varies the variable resonant frequency by varying the variable impedance, as recited in dependent claim 2. Neither Barbaran nor Mizutani disclose a resonant including a variable capacitance, where the controller varies the variable capacitance to vary the variable resonant frequency in response to information received from the remote device, as recited in dependent claim 3. Neither Barbaran nor Mizutani disclose varying the variable resonant frequency in response to power information from the remote device, as recited in dependent claim 4.

Dependent claims 6-14 are allowable for at least the reasons noted above in connection with independent claim 5. Furthermore, none of the references disclose that the "controller varies the rail voltage, the resonant frequency or the duty cycle in response to the power information" as recited in claim 7. None of the references disclose a contactless power supply with a "memory" as recited in claim 8. None of the references disclose a transceiver that "communicates" or "receives power information from" a plurality of remote devices as recited in claims 9 and 10 respectively. None of the references disclose a transceiver that "creates a list in the memory of the power information" as recited in claim 11. None of the references disclose a controller that "determines an optimal setting for the rail voltage, resonant frequency or the duty cycle based upon the list" as recited in claim 12. None of the references disclose a "communication interface for communicating with a workstation" as recited in claim 13.

Dependent claims 16-22 are allowable for at least the reasons noted above in connection with independent claim 15. Furthermore, none of the references disclose a remote device controller that "is capable of varying the secondary winding variable impedance" as recited in claim 16. None of the references disclose a remote device including "a remote device transceiver for communicating with the contactless power supply" as recited in claim 17. None of the references disclose a controller that "varies the secondary winding variable impedance based upon instructions from the contactless power supply" as recited in claim 18. None of the references disclose a controller that "disables the operation of the remote device based upon instructions from the contactless power supply" as recited in claim 19. None of the references disclose a controller that "enables operation of the remote device based upon instructions from

the contactless power supply" as recited in claim 20. None of the references disclose a remote device that "has a remote device memory" with "power usage information" as recited in claim 21. None of the references disclose that "the power usage information is communicated to the contactless power supply by way of the remote device transceiver" as recited in claim 22.

Dependent claims 24-32 are allowable for at least the reasons noted above in connection with independent claim 23. Furthermore, none of the references disclose that "adapting the contactless power supply includes changing the duty cycle or the inverter frequency" as recited in claim 24. None of the references disclose "adapting the contactless power supply includes changing the resonant frequency of the inverter" as recited in claim 25. None of the references disclose "adapting the contactless power supply includes changing the rail voltage" as recited in claim 26. None of the references disclose "determining whether the contactless power supply is capable of supplying power to the plurality of remote devices" as recited in claim 27. None of the references disclose "disabling at least one of the plurality of remote devices if the contactless power supply is not capable of supplying power to the plurality of remote devices" as recited in claim 28. None of the references disclose adapting the contactless power supply if a new remote device has been added to the plurality of remote devices" as recited in claim 29. None of the references disclose "adapting the contactless power supply if one of the plurality of remote devices is removed from the plurality of remote devices" as recited in claim 30. None of the references disclose "varying the secondary winding variable impedance" as recited in claim 31. None of the references disclose "varying the secondary

winding variable impedance is performed as a response to instructions from the contactless power supply" as recited in claim 32.

Dependent claims 34-38 are allowable for at least the reasons noted above in connection with independent claim 33. Furthermore, none of the references disclose a "resonant circuit" as recited in claim 34. None of the references disclose "a rail voltage, and the variable characteristic includes the rail voltage" as recited in claim 35. None of the references disclose a "resonant circuit" with "a resonant frequency, and the variable characteristic includes the resonant frequency" as recited in claim 36. None of the references disclose. None of the references disclose "the contactless power supply has a duty cycle, and the variable characteristic includes the resonant frequency" as recited in claim 37. None of the references disclose "the contactless power supply has an inverter, and the inverter has an inverter frequency, and the variable characteristic includes the inverter frequency" as recited in claim 38.

Dependent claims 40-42 are allowable for at least the reasons noted above in connection with independent claim 39. Furthermore, none of the references disclose the "wireless transmitter comprises an RFID tag" as recited in claim 40. None of the references disclose "the remote device comprises a memory for storing power consumption information" as recited in claim 41. None of the references disclose "the remote device comprises a controller" as recited in claim 42.

Dependent claims 44-47 are allowable for at least the reasons noted above in connection with independent claim 43. Furthermore, none of the references disclose "a

controller for adjusting the variable inductor" as recited in claim 44. None of the references disclose that "the remote device" includes "a memory" as recited in claim 45.

Dependent claims 49 and 51-55 are allowable for at least the reasons noted above in connection with independent claim 48. None of the references disclose that "the inductive power supply has an inverter" as recited in claim 49. None of the references disclose that the "inductive power supply has a rail voltage" as recited in claim 52. None of the references disclose that "the inductive power supply has a circuit sensor" as recited in claim 53.

III. Conclusion

It is respectfully submitted that the subject matter of the amended claims is not anticipated by the art of record and that any attempt to reconstruct the subject matter of the amended claims through a combination of prior art references can only be made in hindsight with the present invention as a blueprint. However, even such an improper combination does not teach or suggest the present invention for the reasons noted above. It is therefore respectfully submitted that the rejection under 35 U.S.C. § 103 are unfounded or overcome, and therefore should be withdrawn.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance. A notice to that effect is earnestly and respectfully requested.

Respectfully submitted,

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